



Full Agenda
9th Annual NBC2 BIOMAN Conference
July 14 -17, 2014
Salt Lake Community College

Sunday, July 13, 2014

6:00 – 7:30 PM *Welcome Reception*

DoubleTree by Hilton

110 West 600 South, Salt Lake City, UT

Introductions, brief overview of conference and guide to local area. Hors d'oeuvres will be served.

Monday, July 14, 2013

8:30 – 9:00 AM *Continental Breakfast and Networking*

JHS Patio

9:00 – 10:00 AM *Keynote Speaker*

JHS 081

“The Changing Landscape of Developing and Gaining Approval of Drug/Biologic Products”

Peter Knauer, VP of CMC at Symic Biomedical/VP of CMC at Jade Therapeutics

This presentation will focus on how the development and approval process for drug/biologics has changed during the course of the last twenty years. Topics to be presented include:

- Traditional state/structure of biopharmaceutical companies*
- Evolved (current) structure of biopharmaceutical companies*
- Traditional development processes for biopharmaceuticals*
- Evolved (current) state of development for biopharmaceuticals*
- Future state of biopharmaceuticals in terms of structure and development processes*

10:00 – 10:15 AM *Break*

10:15 AM – Noon *Panel Discussions, Interactive Session, or Hands-On Workshop*

Panel Discussion: Establishing Successful High School Outreach Programs

JHS 259

Craig Caldwell, Ph.D., Biotechnology Program Chair, Salt Lake Community College, Salt Lake City, UT

Mike Fino, Biotechnology Program Coordinator, Co-Principal Investigator NBC2, MiraCosta College, Oceanside, CA

OR

Panel Discussion: Funding Your Project; Working with the NSF's SBIR Program to Panel Discussion: NSF Opportunities to Fund Your Project

JHS 213

V. Celeste Carter, Ph.D., DUE Lead Program Director, NSF

Sandra Porter, Ph.D., President, Digital World Biology LLC and Co-PI, Bio-Link

Businesses that are funded by the Small Business Innovation Research (SBIR) Program at the National Science Foundation are eligible for supplemental funding that can benefit community colleges, instructors and students. These businesses are natural allies and partners for members of the ATE community. In this session, we will describe the SBIR program and its goals, describe the supplements, and describe how to find and contact the companies that have been funded in your area and field. We will discuss ways to connect with these companies before they apply for SBIR funding and how you can help them with SBIR grants.

OR

Interactive Session: Collaborative Biomanufacturing Development with Industry

JHS 262

Sengyong Lee, Ph.D., Biotechnology Program Chair, Co-Principal Investigator NBC2, Ivy Tech Community College, Bloomington, IN

OR

Hands-On Workshop: Pipettes in the Laboratory and Pipette Repair and Maintenance

JHS 243

Hazem Zanoun, Applications Specialist (Canada), Artel

Sarena Tam, Applications Specialist (West Coast), Artel

These workshops are designed to meet the needs of all laboratory personnel who use pipettes. Participants will learn how to standardize proper technique, identify causes of pipette failure, and recognize ergonomic risk factors and sources of stress.

The Pipette Repair and Maintenance module will help individuals will learn pipette mechanics and procedures for maintenance and repair of air displacement piston pipettes. Sample pipettes will be provided for conducting hands-on pipette maintenance.

Noon – 1:00 PM

LUNCH

Student Pavilion

Lunchtime Keynote Speaker

“Bioscience Immersion: Bringing Industry into the Classroom”

Scott D. Gevaert, Ph.D., Life Science Lab Assistant Program Coordinator, St. Louis Community College – Florissant Valley

Interested in learning how community college instructors gain contextualized training in the practices of the Bioscience industry? Instructors from developmental math to biotechnology participated in the Bioscience Industrial Fellowship Program in North Carolina which provides hands-on training to coincide with in-depth industry visits. Share in the experiences of the instructors that could help today's students be tomorrow's bioscience workforce.

1:30 – 4:30 PM Hands-On Workshops

Hands-On Workshop A, Beginner Track

Cellulase Cloning and Expression

JHS 262

Craig Caldwell, Ph.D., Biotechnology Department Chair, Salt Lake Community College, Salt Lake City, UT

OR

Hands-On Workshop B, Intermediate Track

Biofuels: Microalgae to Oil

JHS 259

Sonia Wallman, Ph.D., Executive Director and Co-Principal Investigator NBC2

Mary Jane Kurtz, Bio-Educational Consultant for NBC2

Jennifer Imbesi, NBC2 Program Manager, Montgomery County Community College, Blue Bell, PA

Tim Kull, Laboratory Assistant, Department of Biotechnology, Montgomery County Community College, Blue Bell, PA

Microalgae to Oil: Microalgae are of increasing interest – they are being utilized for biofuels production, for nutraceuticals production and for the production of biopharmaceuticals. This year's BIOMAN will feature a three afternoon intensive hands-on workshop on growing micro algae to make algal oil biodiesel.

OR

Hands-On Workshop C, Advanced Track

CHO Cell Transfection: Basic cell culture maintenance

JHS 218

Bill Woodruff, Dept. Head, Biotechnology, Co-Principal Investigator NBC2, Alamance Community College, Graham, NC

Maggie Bryans, Ph.D., Assistant Professor of Biotechnology, Co-Principal Investigator NBC2, Montgomery County Community College, Blue Bell, PA

An introduction to the transfection project and protocols we be covered. CHO-K1 cell cultures will be split from a T-25 flask into wells of a 24-well plate in preparation for the next day's transformation activity.

Tuesday, July 16, 2013

8:30 – 9:00 AM Continental Breakfast and Networking

JHS Patio

9:00 – 10:00 AM Keynote Speaker

JHS 081

Steve Wood, Director, Global R&D, Pharmanex

10:00 AM – 1:00 PM **VENDOR SHOW**-Biomanufacturing Equipment and Supplies Vendors

10:00 AM – 12:00 PM Optional Hands-On Workshop

Hands-On Workshop: Pipettes in the Laboratory and Pipette Repair and Maintenance Student Pavilion

Hazem Zanoun, Applications Specialist (Canada), Artel

Sarena Tam, Applications Specialist (West Coast), Artel

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12:30 – 1:00 PM Vendor Show Drawing

LUNCH Student Pavilion

1:30 – 4:30 PM Hands-On Workshops

Hands-On Workshop A, Beginner Track

Cellulase Cloning and Expression

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OR

Hands-On Workshop C, [Advanced Track](#)

CHO Cell Transfection: Transfection of CHO-K Cells

JHS 218

Bill Woodruff, Dept. Head, Biotechnology, Co-Principal Investigator NBC2, Alamance Community College, Graham, NC

Maggie Bryans, Ph.D., Assistant Professor of Biotechnology, Co-Principal Investigator NBC2, Montgomery County Community College, Blue Bell, PA

The cells prepared on the previous day will be mixed with vectors carrying either a gene for beta-actin tagged with Green Fluorescent Protein (GFP - jelly fish) or a cytochrome C subunit tagged with a Red Fluorescent Protein (RFP - coral). Cells will in a variety of patterns incorporate either one or both of the genes of interest.

4:30 PM

Event Reception and Dinner

Snowbird Conference Center and Resort

Wednesday, July 17, 2013

8:30 – 9:00 AM Continental Breakfast and Networking

JHS Patio

9:00 AM – Noon Hands-On Workshops

Hands-On Workshop: QC Microbiology

JHS 262

Maggie Bryans, Ph.D., Assistant Professor of Biotechnology, Co-Principal Investigator NBC2, Montgomery County Community College, Blue Bell, PA

Sheila Byrne, Grant Assistant, Department of Biotechnology, Montgomery County Community College, Blue Bell, PA

John Hasyn, Microbiology Instructor, Montgomery County Community College, Blue Bell, PA

Linda Reh fuss Ph.D., Assistant Professor of Biotechnology and Biology, Co-Principal Investigator of NBC2, Bucks County Community College, Newtown, PA

Microbiological control is a key issue in pharmaceutical manufacturing. This workshop is designed to introduce you to experiments and techniques used in the industry to prevent microbial contamination of products. In this hands-on workshop participants will perform three microbiology experiments. The Limulus Amebocyte Lysate (LAL) gel clot assay will be used to measure endotoxin levels in cell culture samples, the Gram stain will be used to identify Gram positive and negative bacteria, and finally the colorimetric API assay will be used to identify bacterial strains. Participants will also learn how to conduct microbial air monitoring using equipment commonly used in Microbiological Control laboratories such as an Air Sampler and Particle Counter.

OR

Hands-On Workshop: Validation

JHS 213

Lara Dowland, Ph.D., Professor of Biotechnology, Chair, Biotechnology/Biomanufacturing Program, Co-Principal Investigator NBC2, Mt. Wachusett Community College, Devens, MA

Participants in this workshop will learn what validation is and why it's so important in the biomanufacturing industry. We will explore some great online activities, as well as conduct a validation of an autoclave.

OR

Hands-On Workshop: QC Biochemistry: Electrophoresis

JHS 259

Mary Jane Kurtz, Bio-Educational Consultant for NBC2

Polyacrylamide Gel Electrophoresis (PAGE) is a technique widely used for identifying proteins in an unknown sample by staining gels with specific dyes which visually locate individual protein bands. After running and staining each sample on the gel, the unknown samples can be compared to the known molecular weight standards. PAGE analysis is used frequently to determine quality control (QC) across research laboratories and industries. This technique is very useful for students doing research in the classroom laboratory as well as those working in advanced research laboratories. This will be a hands-on workshop with two partners for each PAGE gel, allowing all attendees to individually carry out the activity.

Noon – 1:00 PM LUNCH
 Student Pavilion

1:00 – 5:00 PM **FIELD EXPERIENCE**

Edwards LifeSciences—Cardiovascular Medical Devices

OR

USANA Health Sciences—Dietary Supplements and Natural Product Production

Comprised of both the Essentials and the Optimizers, these high-quality USANA Nutritional are designed to provide the micronutrients (vitamins, minerals, antioxidants, and other compounds) your body needs for optimal, lifelong health by providing a complete and balanced spectrum of nutrients and antioxidants to help counteract poor nutrition and free-radical damage.

*****Please note: A dress code of closed-toe shoes and pants will be strictly enforced on all tours.***

Participants must also bring government-issued identification, such as a driver's license or passport.

Thursday, July 18, 2013

8:30 – 9:00 AM Continental Breakfast and Networking

JHS Patio

9:00 – 10:00 AM Keynote Speaker

JHS 081

“Synthetic Biomanufacturing for Biofuels and Bioproducts”

Ron Sims, Ph.D., Co-Director of the Sustainable Wastes-to-Bioproducts Engineering Center (SWBEC), Head of the Department of Biological Engineering, Utah State University

Synthetic Biomanufacturing involves applying the tools and concepts of synthetic biology to microbiological cells and systems of cells to scale up and to produce bioproducts effectively, efficiently, and economically. The Synthetic Biomanufacturing Institute at Utah State University focuses on emerging research and applications of the relatively new field of synthetic biology. Applications of synthetic biomanufacturing include biomedical, biopharmaceutical, nutraceutical, environmental, and agricultural industries and bioenergy chemicals, as well as long term space flight and planet colonization. Genetically modified cells can be utilized along with naturally occurring cells in an integrated system of upstream and downstream processes that comprise a biorefinery. Essential to the success of a biomanufacturing process is the development and demonstration of scale-up, quality control, and consistency of not only the bioproducts, but the processes utilized as parts of the biorefinery. Specific applications of synthetic biomanufacturing for developing a biorefinery for transforming waste materials and chemicals into bioproducts to contribute toward a more sustainable system for protection of human health and the environment, and simultaneous economic development will be presented. Results have included the use of industrial, municipal, and agricultural wastes that have been utilized as sources of chemicals that have been transformed to produce bioplastic materials, spider silk, biofuels, animal and fish feed, fluorescent chemical tags and antioxidants, and biogas through the scale up and integration of synthetic biology, chemical engineering, agricultural engineering, and manufacturing practices.

10:00 – 10:15 AM Break

10:15 AM – Noon Interactive Sessions or Panel Discussion

Professional Networking for Biotechnicians and Connecting Through LinkedIn

JATC 214

Sandra Porter, Ph.D., President, Digital World Biology LLC and Co-PI, Bio-Link

LinkedIn has become an important venue for professionals in many industries to connect with each other, keep in touch, and learn about job opportunities. Students can use LinkedIn to develop professional resumes, research different companies, and learn which job skills are used in specific types of work. Recruiters use LinkedIn profiles to verify information before hiring. Instructors and program directors can use LinkedIn Groups and connections to communicate with and keep track of both former and current students. During this session we will demonstrate how to set up a LinkedIn group, discuss different ways of using LinkedIn and provide examples.

OR

The STUDENTfacturED Business/Training Enterprise: Providing Students with Contextual Biomanufacturing Experience

JHS 259

Vivian Ngan-Winward, Ph.D., Biomanufacturing Program Director & STUDENTfacturED Mentor, Salt Lake Community College, Salt Lake City, UT

The heavily regulated life science manufacturing industry requires workers to be adequately trained for the positions they hold within companies. This requirement unfortunately results in a dearth of meaningful, application-centered internships available to biomanufacturing students. In order to provide students with an opportunity to apply knowledge and skills learned through course to a real work activities in a biotechnology manufacturing setting, we have established the STUDENTfacturED business/training enterprise at SLCC. The product focus of this student-run company is on supplies that support biotechnology lab instruction. Participants in this session will learn about

- *the STUDENTfacturED training model, its evolution, and how it allows students to practice and master industry-relevant skills,*
- *the ISO 13485-based quality management system that has been established for STUDENTfacturED operations, and*
- *the products Made By Students For Students that are currently available and those in the pipeline.*

OR

Panel Discussion: Teaching Biomanufacturing with the NBC2 Curriculum

JHS 213

Maggie Bryans, Ph.D., Assistant Professor of Biotechnology, Co-Principal Investigator NBC2, Montgomery County Community College, Blue Bell, PA

Linda Rehfuss Ph.D., Assistant Professor of Biotechnology and Biology, Co-Principal Investigator of NBC2, Bucks County Community College, Newtown, PA

Noon – 1:00 PM

LUNCH

Student Pavilion

1:30 – 4:30 PM

Hands-On Workshops

Hands-On Workshop A, Beginner Track

Cellulase Cloning and Expression

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Hands-On Workshop B, Intermediate Track

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OR

Hands-On Workshop C, Advanced Track

CHO Cell Transfection: Analysis and Nuclear Staining with DAPI

JHS 218

Bill Woodruff, Dept. Head, Biotechnology, Co-Principal Investigator NBC2, Alamance Community College, Graham, NC

Maggie Bryans, Ph.D., Assistant Professor of Biotechnology, Co-Principal Investigator NBC2, Montgomery County Community College, Blue Bell, PA

On the last day we will view the transfected cells using fluorescence-capable microscopes, searching for the successful uptake of vectors and genes of interest. We will also apply the fluorescent nuclear stain, DAPI (blue). This will give us incredible fluorescent green, red and blue counter stained cells. Be sure to bring your flash drive to save images.

